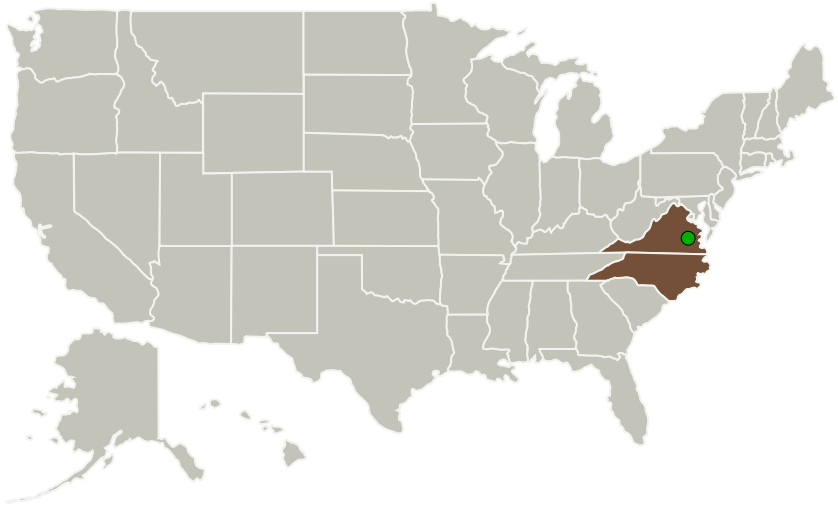
Uncooled Multispectral Photoemissive Infrared Detector, Phase I

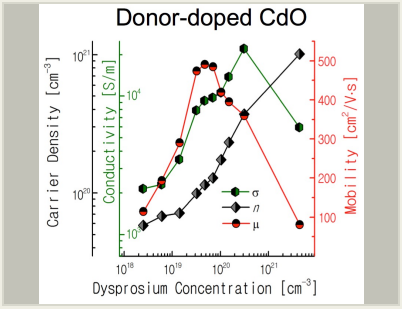
Completed Technology Project (2016 - 2017)

Project Introduction

Using novel materials and device geometries unique to North Carolina State University (NCSU) and Third Floor Materials (3FM) this program will develop a detector technology that enables room-temperature multispectral IR imaging by exploring transduction pathways between infra red light and a measureable electric signal mediated by an epsilon-near-zero (ENZ) mode. The research activity will use a combination of physical vapor deposition, conventional microelectronic fabrication methods, and a combination of optical and electronic modeling tools to design and create a prototype IR detector element that can be tested by an external laboratory. A suite of materials characterization tools will be implemented to characterize structure and morphology, while a suite of property measurement systems will be used to quantify sensor performance in the context of currently available detector technologies.

Primary U.S. Work Locations and Key Partners





Uncooled multispectral photoemissive infrared detector, Phase I

Table of Contents

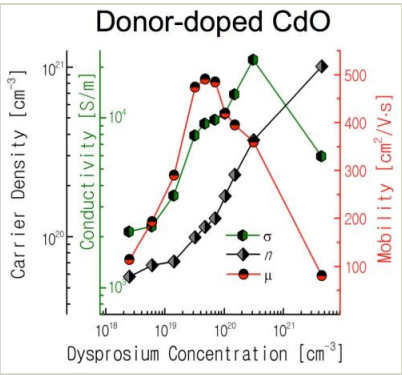
Uncooled Multispectral Photoemissive Infrared Detector, Phase I

Completed Technology Project (2016 - 2017)

Organizations Performing Work	Role	Type	Location
Third Floor Materials	Lead Organization	Industry	Raleigh, North Carolina
Langley Research Center(LaRC)	Supporting Organization	NASA Center	Hampton, Virginia
North Carolina State University at Raleigh	Supporting Organization	Academia	Raleigh, North Carolina

Primary U.S. Work Locations	
North Carolina	Virginia

Images



Briefing Chart Image
Uncooled multispectral photoemissive infrared detector, Phase I
(https://techport.nasa.gov/image/132298)

Organizational Responsibility

Responsible Mission Directorate:
Space Technology Mission Directorate (STMD)

Lead Organization:
Third Floor Materials

Responsible Program:
Small Business Innovation Research/Small Business Tech Transfer

Project Management

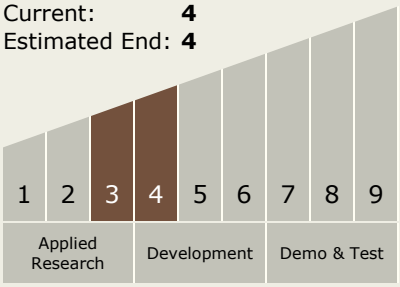
Program Director:
Jason L Kessler

Program Manager:
Carlos Torrez

Principal Investigator:
Jon-paul Maria

Technology Maturity (TRL)

Start: **3**
Current: **4**
Estimated End: **4**



Uncooled Multispectral Photoemissive Infrared Detector, Phase I

Completed Technology Project (2016 - 2017)

Technology Areas

Primary:

- TX08 Sensors and Instruments
  - TX08.3 In-Situ Instruments and Sensors
    - TX08.3.4 Environment Sensors

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System